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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/694,701	10/23/2000	Jang B. Rampal	1956-045	9837

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PATENT LEGAL DEPARTMENT/A-42-C
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EXAMINER	
TUNG, JOYCE	
ART UNIT	**PAPER NUMBER**
1637	

DATE MAILED: 12/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Advisory Action	Application No.	Applicant(s)	
	09/694,701	RAMPAL ET AL.	
	Examiner	Art Unit	
	Joyce Tung	1637	

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE. Therefore, further action by the applicant is required to avoid abandonment of this application. A proper reply to a final rejection under 37 CFR 1.113 may only be either: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114.

PERIOD FOR REPLY [check either a) or b)]

a) ☒ The period for reply expires 3 months from the mailing date of the final rejection.

b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection. ONLY CHECK THIS BOX WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

1. ☐ A Notice of Appeal was filed on _____. Appellant's Brief must be filed within the period set forth in 37 CFR 1.192(a), or any extension thereof (37 CFR 1.191(d)), to avoid dismissal of the appeal.

2. ☐ The proposed amendment(s) will not be entered because:

   (a) ☐ they raise new issues that would require further consideration and/or search (see NOTE below);

   (b) ☐ they raise the issue of new matter (see Note below);

   (c) ☐ they are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or

   (d) ☐ they present additional claims without canceling a corresponding number of finally rejected claims.

   NOTE: _____.

3. ☐ Applicant's reply has overcome the following rejection(s): _____.

4. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).

5. ☒ The a)☐ affidavit, b)☐ exhibit, or c)☒ request for reconsideration has been considered but does NOT place the application in condition for allowance because: *please see the attached*.

6. ☐ The affidavit or exhibit will NOT be considered because it is not directed SOLELY to issues which were newly raised by the Examiner in the final rejection.

7. ☒ For purposes of Appeal, the proposed amendment(s) a)☐ will not be entered or b)☒ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.

   The status of the claim(s) is (or will be) as follows:

   Claim(s) allowed: _____.

   Claim(s) objected to: _____.

   Claim(s) rejected: *29-42,55-62,64-66 and 68-70*.

   Claim(s) withdrawn from consideration: *1-28 and 43-54*.

8. ☐ The drawing correction filed on _____ is a)☐ approved or b)☐ disapproved by the Examiner.

9. ☐ Note the attached Information Disclosure Statement(s)(PTO-1449) Paper No(s). _____.

10. ☐ Other: _____

Following the entry of the amendment filed 11/7/2003, the claims 1-62, 64-66 and 68-70 are pending. Claims 1-28 and 43-56 are withdrawn from further consideration.

Rejections and/or objected from the previous office action are hereby withdrawn. The following rejections are either newly applied or reiterated. They constitute the complete set presently being applied to the instant application.

1. Claims 29-34, 36-38, 41-42, and 55-56 remain rejected under 35 U.S.C. 102(b) as being anticipated by Varma (5,622,826).

Varma discloses immobilizing molecules on surface of platinum, glass or aminated polypropylene (See column 2, lines 48-51). The invention is directed to a method for immobilizing nucleic acid on a platinum surface (See column 2, lines 62-63). Varma also discloses that a hybridization experiment is performed on a platinum surface containing immobilized probes. The probe can be labeled and derivatized or non derivatized (See column 4, lines 36-41). The hybridization complex with labels is detected (See column 4, lines 47-56). The oligonucleotide probes are spotted on a platinum surface (typically 300nL per sport) and then the platinum chip is allowed to air dry at room temperature (See column 7, lines 49-59).
Thus, the teachings of Varma anticipate the limitations of claims 29-34, 36-38, 41-42, and 55-56.

The response argues that first , Varma does not teach a modified surface, which is obtained by introducing a functionality selected from a group consisting of an amino group, a carboxyl group, a thiol group and their derivatives and second Varma does not teach the immobilization of a bioplymer on the modified surface by adsorption. Varma discloses molecules bearing an amino group or functionality are immobilized on platinum surface by first reaction on such surfaces with either an isocyanate or an isothiocyanate to produce immobilized

reactive moieties on the surface (See column 2, lines 49-55). This teaching suggests how the surface of substrate is introduced with the functionality.

Regarding the argument that Varma does not teach the immobilization of a bioplymer on the modified surface by adsorption. It is unclear what reaction is involved in the "adsorption" reaction, since the claim language does not define the phrase.

The response next argues that isocyanate or isothiocyanate groups are not recited in the claim and the closed transition "consisting of" limits the claim to surfaces modified with amino group, a carboxyl group, a thiol group and their derivatives. Since the phrase "their derivatives" is unclear as to what is encompassed in the derivatives, the teachings of Varma read on the limitations of the claims.

The response further argues that it is an unexpected discovery of the present invention that substrates with the modified surface are capable of direct and stable adsorption of biopolymers without the need for chemical linkers and covalent binding. If it is an unexpected discovery, it is suggested to provide the evidences.

The response additionally argues that Varma teaches a two-steps immobilization of nucleic acids on aminated polypropylene substrate including the further modification of aminated polypropylene by reaction with isocyanate or an isothiocyanate to obtain an activated surface and a covalent binding of a nucleic acid derivatized to contain an amino group with the reactive groups on the activated surface (See column 3, lines 23-34 and column 18, lines 7-25). However, based upon the analysis above the claim language does not exclude, the modified surface, the derivatized nucleic acid and the covalent binding on the modified surface. Therefore the teachings of Varma read on the limitations of claim. Thus, the rejection is maintained.

2. Claims 64-66 and 68 are rejected under 35 U.S.C. 102(b) as being anticipated by Fareed et al. (4,970,144).

Fareed et al. disclose a method of detecting a polypeptide contained in a sample comprising the steps of providing a modified substrate (See column 10, lines 19-29). A probe polypeptide that can form a complex with the target polypeptide, contacting either the probe or target polypeptide to a surface of the substrate to form a probe assay article or a target assay article, contacting the probe assay article or target assay article with the probe peptide or target peptides to form a complex comprising the probe and the target polypeptides and then detecting and determining the presence of the complex (See column 11, lines 34-57). A protein solution is air-dried on the bottoms of wells (See column 11, lines 43-43 and column 13, lines 65-68)) The test antigen can be 10-100 nanogram (See column 11, lines 38-43). It is inherent to the limitations of claim 68.

The response argues that Fareed et al. do not disclose a modified surface, which is obtained by introducing a functionality selected from a group consisting of an amino group, a carboxyl group, a thiol group and their derivatives and immobilization by adsorption without additional fixing steps. However, Fareed et al. disclose a method of detecting a polypeptide contained in a sample comprising the steps of providing a modified substrate (See column 10, lines 19-29). The immobilized antibodies may be covalently or physically bound to the solid phase immunoabsorbent by techniques such as covalent bonding via an amide or ester linkage or by absorption. Based upon the limitations of the claim language, the teachings of Fareed et al. anticipate the limitations of the claims. Thus, the rejection is maintained.

3. Claims 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Varma et al. (5,622,826) as applied to claims 29-34, 36-38, 41-42, 55-56 above, and further in view of Cremer et al. (6,197,501).

The teachings of Varma et al. are set forth in the section 1 above and Varma et al. does not disclose fluorescence labeling and applying CCD camera.

Cremer disclose that the hybridization sample are detected by labeling the nucleic acid with fluorescent labels (See column 5, lines 8-16). CCD camera is used to detect the fluorescence signals (See column 5, lines 59-67).

One of ordinary skill in the art would have been motivated to apply fluorescence labeling on nucleic acid molecules and CCD camera to detect the fluorescence signals because with fluorochromium marked nucleic acid the sample sequence can be directly detected after washing steps. Thus, it would have been prima facie obvious to apply fluorescence labeling on nucleic acid molecules and CCD camera to detect the fluorescence signals.

As discussed in section 1 above, claim 29 is not patentable over Varma. Cremer discloses that CCD camera is used to detect the fluorescence signals (See column 5, lines 59-67). Thus, it would have been prima facie obvious to apply fluorescence labeling on nucleic acid molecules and CCD camera to detect the fluorescence signals. The rejection is maintained.

4. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Varma et al. (5,622,826) as applied to claims 29-34, 36-38, 41-42, 55-56 above, and further in view of Rampal et al. (6,013,789).

The teachings of Varma et al. are set forth in the section 1 above and Varma does not disclose using the enzyme substrate to detect the polypeptide.

Rampal discloses a method for attaching pre-synthesized oligonucleotides to a polypropylene support medium which is aminated (as recited in claims 29-31 and 41-42) and that the invention is used to construct oligonucleotide arrays for hybridization assays (See the Abstract) (as recited claim 29 and 32-33). The labeling would be the biotinylation of a target or the detection oligonucleotide in which the biotin moieties bind to an avidin-enzyme conjugate (See column 9, lines 20-26) (as recited in claim 34). The label can also be fluorescent compounds (See column 9, lines 26-28) (as recited in claim 34). To detect biotinylated oligo target, the enzyme substrate, ELF, was used and the signals were detected by a CCD camera (See column 11, lines 13-27).

One of ordinary skill in the art would have been motivated to apply the enzyme substrate,ELF to the method of Varma because the detection by using the enzyme substrate, ELF as taught by Rampal can be reached completion by 15 minutes (See column 11, lines 30-31). It would have been prima facie obvious to apply ELF detection method to the method of Varma.

As discussed in section 1 above, the teachings of Varma anticipate the limitations of claim 29. With the same reasons as set forth in section 1 above, the rejection is maintained.

5. Claims 57-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Varma et al. (5,622,826) and claims 68-70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fareed et al. (4,970,144).

The teachings of Varma et al. are set forth in section 1 above and the teachings of Fareed et al. are set forth in section 2 above.

None of the references above discloses specifically the amount probe or target biopolymer contacted with the substrate, the aliquot amount of the probe or target needed, the time needed for drying as claimed.

However, it would have been prima facie obvious for an ordinary skill in the art at the time of the instant invention to modify the reaction condition of Varma et al. and Fareed et al. by optimizing the amount of the probes or target biopolymers used and the time for air drying the target biopolymer on the surface of substrate because optimization of a reaction condition was routine practice in the art at the time of the instant invention. Moreover, since the amount of polynucleotide or polypeptide used as claimed is in a common range and the time needed for drying the sample is also in a common range it would have been prima facie obvious for an ordinary skill in the art to choose these concentration as claimed.

As discussed in sections 1 and 2 above, the teachings of Varma anticipate the limitations of claim 29, and the teachings of Fareed et al. anticipate the limitations of claim 64 . With the same reasons as set forth in sections 1 and 2 above, the rejection is maintained.

Summary

6. No claims are allowable.

7. Any inquiries concerning this communication or earlier communications from the examiner should be directed to Joyce Tung whose telephone number is (703) 305-7112. The examiner can normally be reached on Monday-Friday from 8:00 AM-4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached at (703) 308-1119 on Monday-Friday from 10:00 AM-6:00 PM.

Any inquiries of a general nature or relating to the status of this application should be directed to the Chemical/Matrix receptionist whose telephone number is (703) 308-0196.

8. Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Art Unit 1637 via the PTO Fax Center located in Crystal Mall 1 using (703) 305-3014 or 308-4242. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989).

Joyce Tung J.T
December 16, 2003

ETHAN WHISENANT
PRIMARY EXAMINER

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